10 CFR 50.73

Progress Energy

Serial: RNP-RA/09-0114
JAN 05 2010

Attn: Document Control Desk
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

LICENSEE EVENT REPORT NO. 2009-003-00
MANUAL REACTOR TRIP DUE TO FAILURE OF
'A' STEAM GENERATOR LEVEL CONTROL MODULE

Ladies and Gentlemen:

The attached Licensee Event Report is submitted in accordance with the requirements of 10 CFR 50.73. Should you have any questions regarding this matter, please contact Mr. C. A. Castell at (843) 857-1626.

Sincerely,

W Scott Saunders

W. Scott Saunders
Plant General Manager
H. B. Robinson Steam Electric Plant, Unit No. 2

WSS/ahv

Attachment

c: L. A. Reyes, NRC, Region II
T. J. Orf, NRC, NRR
NRC Resident Inspector

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville, SC 29550

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES 08/31/2010

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Manual Reactor Trip Due to Failure of 'A' Steam Generator Level Module

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	06	2009	2009	- 003	- 00	01	05	2010	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)	
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)	
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)		

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Ashley Valone	843-857-1256

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JB	JX	Ensign™	N						

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 2203 hours EST on November 6, 2009, with H. B. Robinson Steam Electric Plant, Unit No. 2, operating at approximately 100% power, control room operators responded to alarms received for steam flow greater than feed flow and level deviation on 'A' Steam Generator. Feed Regulating Valve, FCV-478, for 'A' Steam Generator indicated closed with controller demand of 0 percent. Control room operators attempted to manually open FCV-478. During this time, an increase in feed flow was noted. The 'A' Steam Generator level continued to lower to approximately 35 percent. The reactor was manually tripped at 2203 as the trip setpoint was approaching.

The event was caused by a premature failure of the flow error signal summator power supply for the 'A' Feed Regulating Valve Control Loop FC-478E. The summator power supply has been replaced and the loop was calibrated successfully. The condition is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in 10 CFR 50.73(a)(2)(iv)(B).

LICENSEE EVENT REPORT (LER)
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NARRATIVE

I. DESCRIPTION OF EVENT

At 2203 hours EST on November 6, 2009, with H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, operating at approximately 100% power, control room operators responded to alarms received for steam flow greater than feed flow and level deviation on 'A' Steam Generator (SG) [EIIS System:Component AB:SG]. Feed Regulating Valve [JB:FCV] FCV-478 for 'A' SG indicated closed with controller demand of 0 percent. Control room operators attempted to manually open FCV-478 in accordance with AOP-010, "Main Feedwater/Condensate Malfunction." During this time, an increase in feed flow was noted. The 'A' SG level continued to lower to approximately 35 percent. The reactor was manually tripped at 2203 as the trip setpoint of 30 percent was approaching.

The control room operators entered the appropriate post-trip procedures. The auxiliary feedwater system [BA] initiated during the event, as expected. Intermediate Range Nuclear Instrument System Detector [IG:DET], N-35, was noted to be spiking causing the power above Intermediate Range Neutron Flux, P-6 interlock, status light to come on periodically. The spiking on N-35 was attributed to a faulty power supply and was later replaced on November 8, 2009, prior to unit start up.

II. CAUSE OF EVENT

The cause of this event was determined to be due to a vendor design error that resulted in premature part failure in the power supply for the Feed Regulating Control Loop FC-478E. A causal factor that contributed to this event was a lack of documentation regarding design issues with the Ensign™ Power Supply-Revision 3 by the vendor.

III. ANALYSIS OF EVENT

The condition described in this Licensee Event Report is reportable under 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in 10 CFR 50.73(a)(2)(iv)(B).

This event was investigated using the HBRSEP, Unit No. 2, Corrective Action Program (CAP) and documented in Significant Adverse Nuclear Condition Report 364853. The significant adverse condition investigation associated with this reportable event was reviewed by the Plant Nuclear Safety Committee on December 22, 2009. The investigation determined that failure of the FC-478E summator power supply was due to a vendor design error that resulted in premature part failure in the power supply.

During the investigation, the extent of condition was evaluated for all modules with Ensign™ Power Supplies-Revision 3. There were 88 modules identified at HBRSEP, Unit No. 2. Of these 88, 78 are currently in operation. There are 10 modules where a failure in the power supply

could cause a plant transient or loss of control function. In addition, there are 34 modules where a failure in the power supply could cause the plant to be placed in a ½ trip condition. The remaining modules are for alarm and indication only.

The safety significance of this event is considered very low. The plant responded as designed and the operating crew manually tripped the reactor in response to the condition they observed. The auxiliary feedwater system initiated during the event, as expected. Therefore, this event posed negligible adverse safety consequences for the public or plant personnel.

IV. CORRECTIVE ACTIONS

Completed Corrective Actions:

- FC-478E summator power supply was replaced with an Ensign™ Power Supply-Revision 4. Revision 4 does not contain the same capacitors in Revision 3 that caused the premature failure of the power supply. The channel was tested and restored to normal operation at 1752 hours EDT on November 7, 2009.
- Identified and located all HBRSEP, Unit No. 2, modules with Ensign™ Power Supplies-Revision 3 installed.
- Placed stock quantities of NUS modules and modules being prepared for installation that contain Ensign™ Power Supplies-Revision 3 "on-hold" to be returned to the vendor for replacement of the power supply.

Planned Corrective Actions:

- Replace modules in applications that have an Ensign™ Power Supply-Revision 3 where a blown fuse failure could result in a potential transient, loss of control function, or put the plant in a half trip condition. The module replacements are targeted for completion during the next refueling outage, which is currently scheduled to begin on April 17, 2010.

V. ADDITIONAL INFORMATION

Failed Component Information:

The failed power supply was an Ensign™ Power Supply-Revision 3 contained in a Halliburton summator, Model Number MTH-800-05/05/05/05-07-08.

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NARRATIVE

Previous Similar Events:

Licensee Event Reports (LERs) for HBRSEP, Unit No. 2, were reviewed from the past 10 years. No events were identified that were similar to the event described in this LER.